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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,292	10/14/2003	Giuseppe Calarco	851663.482	9819

38106 7590 05/26/2009
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EXAMINER	
LIANG, REGINA	

ART UNIT	PAPER NUMBER
2629	

MAIL DATE	DELIVERY MODE
05/26/2009	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/685,292
Filing Date: October 14, 2003
Appellants: CALARCO ET AL.

Harold H. Bennett II
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 4/8/09 and 2/9/09 appealing from the Office action mailed 5/6/08.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,573,883	Bartlett	06-2003
6,249,274	Svancarek et al	06-2001
5,701,131	Kuga	12-1997

4,682,159	Davison	07-1987
6,765,553	Odamura	06-2004

Lee, S., et al. "Two-Dimensional Position Detection System with MEMS Accelerometer for MOUSE Applications," Proceedings of the Design Automation Conference, Vol. 38, June 18, 2001, pages 852-857.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims 1, 2, 8, 12-14, 16-18, 20, 22, 30-34, 36-39, 41, 54-58, 63-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett (US 6,573,883) in view of Lee et al ("Two-Dimensional Position Detection System with MEMS Accelerometer for MOUSE Applications", hereinafter Lee).

As to claim 1, Fig. 5 of Bartlett discloses a user controlled device (handheld computing device 700), comprising a body, that is movable in a plurality of positions of a 3-D space; a motion sensor (740 in Fig. 5, col. 6, lines 21-26) coupled to the body and configured to detect movements of the body in a first and second directions; a microcontroller (inherent including a microcontroller in the computing device) coupled to the sensor and configured to generate first control signals (position command signals) correlated to the positions, only while detected movements of the body are less than a speed of movement threshold (no gesture command is detected; note that the gesture command as shown in Figs. 2a-2d correspond to a speed threshold, e.g., in Fig. 2a, the quick movement of the handheld has to be greater than the angular orientation about an axis of rotation during the time interval between T_f-T_s, an activation signal is detected, otherwise, the activation signal is not detected, thus, the angular orientation about an axis of rotation during the time interval reads on a speed of movement threshold or speed threshold as claimed) and greater than a amplitude of movement threshold ($\theta > \theta 1$, see col. 5, lines 35-47).

Bartlett does not disclose the motion sensor comprising a MEMS acceleration sensor. However, Lee teaches a position detection system with MEMS accelerometer, Fig. 1 of Lee also teaches a microcontroller coupled to the MEMS sensor and configured to generate control signals correlated to the positions (page 852). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Bartlett to utilize a MEMS acceleration sensor to detect movements of the body in a first and second directions since Lee teaches the MEMS accelerometer "gives high sensitivity with low temperature drift" and "the device dimensions optimize large sensitivity over layout area" (page 852, lines 2-4 in [2.2]).

As to claim 2, Bartlett teaches the body of the handheld device is in a form of PDA. Lee teaches the body of the input device is in a form of mouse. And it is well kwon in the art that user input device comprising a joystick, a game pad. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user input device of Bartlett as modified by Lee to be in a form selected between computer mouse, joystick, gamepad, and PDA so a to input commands and information into a computer since such forms are well known and familiar to the user. Furthermore, a change in shape of the input device would have been obvious to one having ordinary skill in the art at the time the invention was made, since a mere change in shape or from involves only routine skill in the art. *In re Dailey*, 149 USPQ 47 (CCPA 1976).

As to claim 8, Lee teaches the MEMS acceleration sensor comprises at least a two-axis accelerometer or two one-axis accelerometers (page 852, 2nd paragraph in INTRODUCTION).

As to claims 12, 33, 34, Bartlett teaches the first control signals comprising a control signal for displacing a screen pointer along a first direction upon detection of movement of the device in the first direction and a control signal for displacing the screen pointer along a second direction upon detection of movement of the device in the second direction (see Fig. 4a, the highlighted selection band corresponds to the screen pointer, move the selection band to the top or to the bottom corresponding to displacing the screen pointer along a first direction or second direction as claimed).

As to claim 13, Bartlett discloses generating second control signals upon detecting movements of the device that are greater than the speed of movement threshold (Fig. 2a, the angular orientation about an axis of rotation during the time interval is reached, and one of gesture command is detected).

As to claims 14, 22, 39, Bartlett teaches that a gesture command (e.g. Figs. 2a-2d) is used to perform a selection function and that the gesture command can be in the same direction as the position command (e.g. col. 4 lines 40-41, "Gesture commands can correspond to a pattern of movement relative to one of the three orthogonal axes") and it is old and well known in the art for input devices (e.g. mouse) to provide cursor movement and mouse click command (selection function) by the user (e.g. Bartlett col. 1 lines 39-43). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the second control signals in Bartlett as modified by Lee to comprise mouse click function command to allow the user to provide simple cursor movement command and mouse click function command (selection command) to provide for "completely finger-free data input" for an electronic device (Bartlett col. 2 lines 19-22). It would have been further obvious to include the claimed mouse click mouse functions since it is an obvious substitution of one type of mouse click function for another.

As to claim 30, note the discussion of claim 1 above. Furthermore, the highlighted selection band as shown in Figs. 4a and 4b of Bartlett corresponds to a pointer on a computer screen.

As to claim 31, Bartlett discloses ignoring movement signals that do not exceed an amplitude threshold ($\theta<\theta 1$).

As to claims 32, 38, Bartlett discloses producing activation signals corresponding to movement of the body that exceeds the speed threshold (the angular orientation about an axis of rotation during the time interval is reached, and one of gesture command is detected as shown in Fig. 2a).

As to claim 36, note the discussion of claims 1 and 30 above. Furthermore, it is inherent that the system of Bartlett as modified by Lee having a CPU coupled to the computer screen for controlling the information in the computer screen.

As to claim 37, Lee teaches the MEMS sensor is configured to produce positions signals corresponding to movement of the pointing device around first and second mutually perpendicular axes (X and Y axis).

As to claim 41, Bartlett teaches to control the speed of movement of the pointer (the rate of scrolling increasing when $\theta>\theta 2$).

As to claim 16, note the rejection of claims 1, 13 above, furthermore the display screen in Bartlett corresponds to the claimed electrical appliance.

As to claims 17, Lee teaches the MEMS sensor is configured to detect movement of the body along or around first and second axes.

As to claims 18, 20, Bartlett teaches generating position signals corresponding to movements of device along first and second directions.

As to claims 54-56, Lee teaches the MEMS sensor is configured to detect movements of the device in a first, second and third directions (page 857, last paragraph in CONCLUSION).

As to claims 57, 58, Fig. 5 of Bartlett teaches the rotation of the body in X (751) and Y (752) and having threshold, thus Bartlett teaches the threshold comprising X axis threshold and Y axis threshold as claimed.

As to claims 63, in addition to the remarks as applied to claim 1, Figs. 2a of Bartlett also discloses determining a rate of change position (changing the angular orientation about an axis of rotation during the time interval).

As to claim 64, Bartlett teaches producing scrolling when $\theta>\theta 1$ (amplitude of change exceeds the amplitude threshold $\theta 1$).

As to claim 65, the highlighted selection band as shown in Figs. 4a and 4b of Bartlett corresponds to a screen pointer, Bartlett also teaches the rate of scrolling increasing when $\theta>\theta 2$.

2. Claims 3, 4, 10, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett and Lee as applied to claim1 above, and further in view of Svancarek (US 6,249,274).

As to claims 10, 11, Bartlett further teaches that the control device and the display screen and can separate from each other (e.g. Fig. 7, col. 8 lines 22-27), however Bartlett as modified by Lee does not explicitly disclose the user controlled device having transmission means for connecting the microcontroller to an electrical appliance. Svancarek is cited to teach a user controlled device similar to Bartlett and Lee. Fig. 2 of Svancarek teaches a user controlled device (100) for controlling the computer and microprocessor-based or programmable consumer electronics (electrical appliance) having transmission means (118) for connecting the microcontroller (102) to an electrical appliance (col. 2, lines 25-45), wherein the transmission means comprising a wire or wireless transmission (col. 4, lines 30-31). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user input device of Bartlett as modified by Lee to have the transmission means as taught by Svancarek in order to transmit information from microcontroller to computer or electronic device when the display screen is separate from the control device.

As to claim 3, Svancarek teaches the user controlled device comprise support means (134, 136) such that the device is titable around two axes by the user. Thus, it would have been obvious to modify the body of Bartlett as modified by Lee to have support means as claimed for better rotation control.

As to claim 4, Bartlett as modified by Lee and Svancarek does not disclose the body is supported by rounded base, at least one spring, yieldable balls or elastically supported balls. However, it would have been an obvious matter of design choice to modify the body of the user controlled device of Bartlett as modified by Lee and Svancarek to have the limitation as claimed, since such a modification would have involved a mere change in the shape of a components. Furthermore, a change in shape of the input device would have been obvious to one having ordinary skill in the art at the time the invention was made, since a mere change in shape or from involves only routine skill in the art. *In re Dailey*, 149 USPQ 47 (CCPA 1976).

3. Claims 5, 6, 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett and Lee as applied to claims 1 and 30 above, and further in view of Kuga (US 5,701,131).

As to claims 5, 6 and 35, Bartlett as modified by Lee teaches the body is a housing accommodating the MEMs acceleration sensor. Bartlett as modified by Lee does not teach the body is fixed to an article to be worn by a user. However, Figs. 1 and 2 of Kugo teach a user controlled device is fixed to a goggle (4) to be worn by a user. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user controlled device of Bartlett as modified by Lee to be fixed to a article and mounted to user's head as taught by Kuga so as to provide a hand free input control device.

4. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett, Lee and Kuga as applied to claim 6 above, and further in view of Davison (US 4,682,159).

Kuga teaches the article is an eyeglass. Bartlett as modified by Lee and Kuga does not explicitly disclose the article is a hairband. However, Davison teaches a pointing device is mounted in a hairband. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user input device of Bartlett as modified by Lee and

Kuga to be mounted to hairband as taught by Davision so as to provide a hand free input control device.

5. Claims 42-45, 48, 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett in view of Odamura (US 6,765,553).

As to claim 42, Fig. 5 of Bartlett discloses a user controlled device comprising: a body, a sensor (740 Fig. 5) coupled to the body and configured to produce a first signal corresponding to rotation of the body around a first axis (pitch 752), and a circuit configured to produce a movement command (the selection band movement command in the stepwise rate as shown in Figs. 4a and 4b corresponds to the movement command) in a first direction (vertical direction), corresponding to a value of the first signal, when the first signal indicates rotation of the body that is lower than a speed threshold, and to produce a first function command when the first signal indicated rotation of the body that exceeds the speed threshold (note that the gesture command as shown in Figs. 2a-2d correspond to a speed threshold, e.g., in Fig. 2a, the quick movement of the handheld has to be greater than the angular orientation about an axis of rotation during the time interval between T_f-T_s, an activation signal is detected, otherwise, the activation signal is not detected, thus, the angular orientation about an axis of rotation during the time interval reads on a speed of movement threshold or speed threshold as claimed).

Bartlett differs from claim 42 in that the movement command is not a cursor movement command. Odamura is cited to teach a user controlled device similar to Bartlett. Odamura teaches the same movement command can be used to control either a cursor movement command for controlling cursor movement (S24-S26 in Fig. 5, S35-S36 in Fig. 8B) or a scroll movement command for scrolling of display data. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify movement command of Bartlett to be a cursor movement command since Odamura teaches the operation of the scrolling data and cursor movement in the user controlled device are equivalent each other and can be controlled by the same position command to simplify operation by the user.

As to claim 43, Bartlett differs from the claimed invention in not disclosing the first function command is a mouse click command. However, Bartlett teaches that a gesture command (e.g. Figs. 2a-2d) is used to perform a selection function and that the gesture command can be in the same direction as the position command (e.g. col. 4 lines 40-41, "Gesture commands can correspond to a pattern of movement relative to one of the three orthogonal axes") and it is old and well known in the art for input devices (e.g. mouse) to provide cursor movement and mouse click command (selection function) by the user (e.g. Bartlett col. 1 lines 39-43). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the first function command in Bartlett as modified by Odamura to comprise a mouse click function command to allow the user to provide simple cursor movement command and mouse click function command (selection command) to provide for "completely finger-free data input" for an electronic device (Bartlett col. 2 lines 19-22).

As to claim 44, Bartlett discloses the circuit is configured to produce the first function command when the first signal indicates rotation of the body in a first direction exceeding the speed threshold, and to produce a second function command when the first signal indicates rotation of the body in a second direction exceeding the speed threshold (the angular orientation about an axis of rotation during the time interval is reached, and one of gesture command is detected as shown in Fig. 2a).

As to claim 45, note the discussion of claim 43 above. Bartlett as modified by Odamura does not disclose the first function command is a left click command and the second function command is a right click command. However, it is old and well known in the art that a mouse click command comprising a left click command and a right click command. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user controlled device Bartlett as modified by Odamura to have a left click command and a right click command so as to provide a conventional mouse clicking functions.

As to claim 48, Bartlett teaches the circuit is configured to produce the movement command only when the first signal indicated rotation of the body exceeding an amplitude threshold (the selection band movement only when the angular orientation θ>θ1, see col. 5, lines 42-44).

As to claim 50, Bartlett teaches the thresholds are any preferred value (col. 3, line 63 to col. 4, lines 5), this reads on the speed and amplitude threshold are selectable by user of the device.

As to claim 51, Bartlett teaches the sensor is configured to produce a second signal corresponding to rotation of the body around a second axis (roll 751) perpendicular to the first axis (pitch 752), and the circuit is further configured to produce a second function command when the second signal indicates rotation of the body around the second axis exceeding a respective speed threshold (the angular orientation about an axis of rotation during the time interval is reached, and one of gesture command is detected as shown in Fig. 2a).

As to claim 52, Bartlett teaches it is well known in the art that a user control device can produce a third signal corresponding to movement of the body along a third axis perpendicular to the first and second axes, and configured to produce a third command when the third signal indicates movement of the body (col. 2, lines 1-7). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Bartlett as modified by Odamura to produce the third signal as claimed to optimize the handheld device.

6. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett and Odamura as applied to claim 42 above, and further in view of Lee.

Bartlett as modified by Odamura does not disclose the sensor is MEM type sensor. However, Lee teaches a position detection system with MEMS accelerometer. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the sensor of Bartlett as modified by Odamura to utilize a MEMS acceleration sensor as taught by Lee since the MEMS accelerometer which “gives high sensitivity with low temperature drift” and “the device dimensions optimize large sensitivity over layer area” (see Lee, page 852, lines 2-4 in [2.2]).

(10) Response to Argument

Appellants’ remarks (page 19 of the Brief) that “First, contrary to the Examiner’s statement, Bartlett specifically teaches that position commands are generated even when gesture commands are detected" are not persuasive. Also, note the examiner’s response to appellants’ arguments set forth in the final rejection which is incorporated by reference herein. Clearly stated in the section cited by appellant (col. 6, lines 49-58 of Bartlett), the gesture command for generating a activate signal (claimed control signal) requires a complete submission of a finite interval of time Δt equal to t_f minus t_s, during the interval of time or prior to the completion of the interval of time, the position commands are interpreted, and the gesture command is not generated, **only** the position command is generated, therefore only when the gesture is completed is there a control signal which reads on "to generate first control signal correlated to said position, only while detected movements… are less than a speed of movement threshold" as recited in claim 1.

Appellants' remarks (page 19-20 of the Brief) that "Bartlett does not teach a speed of movement threshold below which it will not detect a gesture command" and "Bartlett would detect gesture commands of any speed" are not persuasive. Bartlett states "A gesture command comprises a time varying position expressed as a unique pattern of movement over an interval of time" (col. 3, lines 31-34), the gesture commands in which have angular orientation about an axis of rotation during the time interval between t_f-t_s as shown in Figs. 2a-2d clearly correspond to a speed threshold, e.g., in Fig. 2a, the quick movement of the handheld has to be greater than the angular orientation about an axis of rotation during the time interval between t_f-t_s (the angular orientation about an axis of rotation during the time interval between t_f-t_s corresponds to a speed of movement threshold), an activation signal is detected, in other words, if the quick movement of the handheld is not greater than the angular orientation about an axis of rotation during the time interval between t_f-t_s (the quick movement of the handheld is below the speed of movement threshold), no gesture command is detected and no gesture command is activated. Although Bartlett does not explicitly disclose the how much angular orientation about an axis of rotation during the time interval between t_f-t_s as shown in Figs. 2a-2d are the minimum threshold values to active the gesture commands, the system of Bartlett have to set a minimum threshold value in order to active the gesture command. Furthermore, even though Bartlett does not explicitly used the term “speed” however based on the angular movement [distance] and time interval which would provide an angular velocity which is clearly a speed. Thus, Bartlett clearly teaches a speed of movement threshold as claimed.

Appellants’ remarks (pages 20-22 of the Brief) that "there is no teaching that Bartlett's position commands must be slower than its gesture commands" are not persuasive. Appellants generated figures 6-9 in the Brief are based on Fig. 2a of Bartlett, all figures 6-9 generated by appellants include gesture commands and are guess work by appellants. Fig. 2a of Bartlett is a diagram of example gesture command in terms of angular orientation as a function of time. Bartlett relies on the tilt commands as shown in Fig. 1 for the position commands. Bartlett states “A gesture command comprises a time varying position expressed as a unique pattern of movement over an interval of time” (col. 3, lines 31-34), and “A position command can comprises, for example, a fixed angular orientation relative to a particular axis of rotation". Without any gesture commands as shown as in Bartlett Figs. 2a-2d or without any quick movement of the handheld device greater then the angular orientation about an axis of rotation during the time interval between t_f-t_s, only position command is generated.

Appellants’ remarks regarding claim 13 (page 23 of the Brief) are not persuasive since the gesture commands in Bartlett reads on the second control signals as claimed in claim 13, note arguments above regarding control signals generated based on speed of the gesture.

Appellants’ remarks regarding claims 16-18, 20, 22, 57 and 58 (pages 23-24 of the Brief) are not persuasive for the same reasons as applied to claim 1 above. The gesture commands in

Bartlett correspond to sending function activation signals and the position commands of Bartlett correspond to sending pointer control signal as claimed in claim 16.

Appellants' remarks regarding claims 30, 31, 33 and 34 (page 24 of the Brief) are not persuasive, note the discussion regarding claim 1 above. The highlighted selection band as shown in figs. 4a and 4b of Bartlett corresponds to a pointer on a computer screen. Therefore appellants' arguments are not persuasive.

Appellants' remarks regarding claim 32 (page 25 of the Brief) are not persuasive. Figs. 2a-2d of Bartlett teaches the gesture commands are activated when the quick movement of the handheld is greater than the angular orientation about an axis of rotation during the time interval between t_f-t_s, which clearly reads on "producing function activation signals corresponding to movement of body that exceed the speed threshold" as claimed in claim 32.

Appellants' remarks regarding claims 36 and 37 (page 25 of the Brief) are not persuasive. As discussed above, Fig. 1 of Bartlett teaches a position command is activated in which a fixed angular orientation relative to a particular axis of rotation, and Figs. 2a-2d of Bartlett teaches the gesture commands are activated in which an angular orientation that varies over an interval of time relative to a particular axis of rotation, thus, Bartlett's clearly distinguish between its position commands and gesture commands.

Appellants' remarks regarding claim 38, 39 and 41 (pages 25-26 of the Brief) are not persuasive. Figs. 2a-2d of Bartlett teaches the gesture commands are activated when the quick movement of the handheld has to be greater than the angular orientation about an axis of rotation during the time interval between t_f-t_s. Furthermore, even though Bartlett does not explicitly used the term "speed" or "rate" however based on the angular movement [distance] and time interval which would provide an angular velocity which is clearly a speed or rate, which reads on the microprocessor "is configured to produce a function activation signal when the rate of movement of the pointing device exceeds the threshold" as claimed.

Appellants' remarks regarding claims 63-65 (page 26) are not persuasive. Note the discussion above regarding generating a pointer control signal only based on the rate of change. Bartlett therefore teaches "a circuit configured to … produce a pointer control signal only if the rate of change does not exceed the rate of change threshold…" as claimed.

Appellants' remarks (pages 26-29 of the Brief) regarding claims 42-45, 48, 50-52 are not persuasive, see the remarks regarding claim 1 above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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